



Use of computer modeling for emergency preparedness functions by local and state health officials: A needs assessment

Author(s): Rosenfeld LA, Fox CE, Kerr D, Marziale E, Cullum A, Lota K, Stewart J, Thompson MZ
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Abstract:

The authors, collaborating from several public health institutes, present the methodology, results, and lessons learned from a multistate needs assessment of local and state public health and safety officials regarding their familiarity and use of formal computer modeling for preparedness activities. The study was undertaken to provide information to the newly formed Preparedness Modeling Unit within the Centers for Disease Control and Prevention. The focus was on the use of sophisticated mathematical models associated with three public health threats: pandemic influenza, radiologic release, and severe heat waves. The use of computer modeling and scenario-based analyses can be used to better frame problems and opportunities, integrate data sources, expect outcomes, and improve multistakeholder decision making. The results of the eight state needs assessment demonstrated that preparedness officials are familiar with models and would use computer modeling as a tool, along with other tools and general experiences, depending upon the perceived quality and validity of the model and the assumptions, as well as the applicability, of the model to their particular setting and population. More needs to be done to improve awareness and dissemination of available models and share best practices in both knowledge and use of models. Use of preparedness modeling would enhance the planning for vulnerable and at-risk populations, all-hazard emergencies and infectious disease containment strategies, as well as for response functions including evacuation, sheltering, quarantine, and distribution of medications and supplies.

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Temperature, Other Exposure

Temperature: Extreme Heat

Climate Change and Human Health Literature Portal

Other Exposure: Radiologic release

Geographic Feature: ☒

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☒

resource focuses on specific location

United States

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Airborne Disease

Airborne Disease: Influenza

Medical Community Engagement: ☒

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

Computing System, Methodology

Resource Type: ☒

format or standard characteristic of resource

Research Article, Research Article

Resilience: ☒

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☒

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content